REMARKS/ARGUMENTS

Claims 14-35 are pending. Page 5, line 5, of specification has been amended to correct an obvious error which rendered "micromoles" as "millimoles". An amendment to correct an obvious error does not constitute new matter where one skilled in the art would not only recognize the existence of error in the specification, but also the appropriate correction, In re Oda, 170 USPQ2d 268 (CCPA 1971), MPEP 2163.07 (a). The Applicants respectfully submit that one skilled in the art would recognize that the correction of the unit from millimoles to micromoles as an appropriate correction of an obvious error for the following reasons. An oxygen content of 5 millimoles/liter cannot be reached under conditions suitable for bacterial culture, since the maximal amount of oxygen that can be dissolved in air-saturated water at 30°C at 1 atmosphere is about 200-250 micromoles. Moreover, in a culture medium that contains solutes, such as mineral salts and the like, the solubility of oxygen is still lower. Reaching a oxygen content of 5 millimoles would likely necessitate extraordinary measures not contemplated by the specification, such as saturating the medium with pure oxygen under a high pressure. Such a high oxygen content would be expected to kill any bacteria, even most aerobic ones. Thus, based on the specification as filed, one with skill in the art would have recognized the obvious error in the unit values.

Claims 14, 16-19, and 23 have been editorially amended for clarity. New Claims 27-44 find support in the original claims and specification as follows: Claim 27 (Claim 1, page 5, lines 1-2), Claim 28 (page 8, line 34-*et seq.*), Claim 29 (page 11, line 14-*et seq.*), Claim 30 (page 12, line 20-*et seq.*), Claims 31-32 (page 16, e.g. Table 5), Claim 33 (page 6, line 25-*et seq.*), Claims 34-35 (page 6). Accordingly, the Applicants do not believe that any new matter has been added.

The Applicants that Examiner Marx for the courteous and helpful discussion of

February 10, 2004. The differences between aerobic and fermentive processes were discussed. The Examiner expressed a concern that fermentive processes do not strictly exclude oxygen, thus, it may be difficult to distinguish the claimed invention on this basis. It was suggested that further limitations to the amount of oxygen in the claimed process might help distinguish the claimed process. It was suggested that the Applicants specifically address the disclosure of Kaneko which refers to cultivation of lactic acid bacteria with shaking in the presence of hemin. These issues are addressed below.

Election/Restriction

The Applicants note that the Lack of Unity requirement has been maintained. The Applicants maintain their traverse and assert that the all the groups share corresponding technical features, namely, lactic acid bacteria with superior preservation and acidification properties.

Rejection—35 U.S.C. 112, second paragraph

Claims 14-23 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. These rejections are moot in view of the amendments above.

Rejection—35 U.S.C. §102

Claims 14, 16, 17 and 21 were rejected under 35 U.S.C. 102(b) as being anticipated by Keitel, U.S. Patent No. 3,420,676, Heuser, U.S. Patent No. 1,570,891, Treschow et al, U.S. Patent No. 3,028,241, or DE 2440516.

The cited prior art does not anticipated the claimed invention, because none of the prior art processes are performed under aeration as required by independent Claims 14 and 27. The Applicants respectfully submit that for one of skill in the art "aeration" of a culture

has a precise meaning: it means that fresh air or oxygen is continuously provided and distributed in the whole culture. One aerates a culture medium in order to favour aerobic metabolism and growth of aerobic bacteria, but not in order to favour lactic acid fermentation.

Keitel discloses a method of producing vegetable juices by fermenting a vegetable mash with lactic acid bacteria until the pH has dropped to below 4.5, and the juice out of the mash. They also indicate that the acidic residues remaining after squeezing contain lactic acid bacteria and maybe used as an inoculate to ferment fodder. The fact that a pH lower than 4.5 is reached clearly excludes the possibility that the bacteria are cultured under aeration. For instance, Example II indicates that the mash is fermented in a vessel of stainless steel, with or without a stirring mechanism, until a suitable acidity, e.g. a pH-value of 3.7 to 3.8 is attained. Although the possibility of stirring the culture is mentioned, the pH-value attained clearly shows that this stirring is performed in such conditions (for instance a closed vessel and/or N_2 atmosphere) that it does not result in the aeration of the culture.

Heuser discloses that a mash can be inoculated with lactic acid bacteria and fermented until a lactic acid content of between 0.5 and 1.5% is reached. A portion of the fermented mash can be used to inoculate a new mash. Since a lactic acid content of between 0.5 and 1.5% is reached, it is clear that the fermentation is not performed under aeration.

Treschow, Claim 1, discloses "a method of producing a food product from blood which comprises inoculating the blood with a fish pulp that has been fermented by means of lactic bacteria and fermenting the inoculated blood to a pH value of not more than 4". It is indicated that the fish pulp that is used to inoculate the blood can be obtained "from the current manufacture of fermented fish pulp". This document is directed to a fermentive process and does not disclose or suggest a process conducted "under aeration".

DE 244516 discloses new *Lactobacillus* strains and their use for preparing fermented vegetables. Example 1 discloses the isolation of *Lactobacillus* strains that are cultured on agar plates under an atmosphere of N_2 and CO_2. Example 2 discloses the use of an isolated strain in a process for fermenting cabbage. In a first step (a) the *Lactobacillus* strain used is recovered from agar culture, and "activated" by three consecutive 1-day cultures at 30°C in 10 ml of cabbage juice. The last culture is used for inoculating 3 1 of cabbage juice, which are incubated 15 h at 30°C, and then used for inoculating the preculture. In a second step (b) 300 l of cabbage juice previously sterilized by heating and cooled are inoculated with the culture of step a), and briefly stirred to disperse the bacteria. After 12-14h incubation, a preculture having a pH of 4 is obtained. None of these cultures is obtained under aeration: the agar culture is obtained under N_2 and CO_2; the cultures in cabbage juice are only inoculated and incubated (no stirring or shaking is mentioned); the preculture is only briefly stirred in order to allow a good repartition of the inoculate.

Even if these documents disclosed "starter cultures" of lactic acid bacteria, such cultures would have been produced by fermentation in a classical manner, and not by a process involving aeration, since the main goal of the prior art documents was lactic acid production or fermentation. Accordingly, the Applicants respectfully submit that the cited prior art cannot anticipated the present processes of producing starter cultures of lactic acid bacteria under aeration.

Rejection—35 U.S.C. §103

Claims 1-23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Keitel, U.S. Patent No. 3,420,676, Heuser, U.S. Patent No. 1,570,891, Treschow et al, U.S. Patent No. 3,028,241, or DE 2440516, taken with Kaneko et al., U.S. Patent No. 5,075, 226, and El-Megeed et al., U.S. Patent No. 4,897,350.

Keitel, Heuser, Treschow, and DE 2440516, have been addressed above. These documents do not disclose or suggest culture of lactic acid bacteria under aeration in the presence of a porphorin, especially in the presence of at least 5 micromoles of oxygen as required by Claim 27.

Kaneko, Claim 1, claims a method for fermentive production of diacetyl and acetoin comprising culturing a lactic acid bacterium. . .with shaking or under aeration" in the presence of one or more porphorins, such as heme protein or iron porphorin. However, Kaneko does not disclose or suggest a method for preparing a lactic acid bacterial starter culture having the improved viability characteristics of that of the present invention.

The improved viability of bacterial starter cultures produced by the present invention is shown, for example in Tables III and IV on pages 14 and 15 of the specification. Briefly, these tables show that much greater numbers of lactic acid bacteria cultivated under aeration in the presence of a porphorin than corresponding bacteria cultivated without aeration or porphorins.

The Official Action indicates that the Kaneko bacteria "grow to high density". To better characterize the differences between the Kaneko process and that of the present invention, the Applicants would like to point out the differences between "growth" and "viability". Bacterial cultures typically undergo four distinct phases: (1) lag phase, (2) log phase, (3) stationary phase and (4) death phase. Good growth means efficient multiplication during log phase resulting in a high growth rate and in a high cell population entering stationary phase. Good survival means a delayed onset of death phase and/or a slow decrease of the cell population during death phase. Conditions which enhance growth are not the same as those resulting in enhanced cell survival. Hence, while the Kaneko process which is directed to the production of diacetyl and acetoin may at some point result in the growth of bacteria to high density, there is no suggestion in this document to harvest or isolate the

bacteria, nor to harvest or isolate the bacteria at a point in their growth cycle where they are highly viable, and thus most useful for starter cultures. Moreover, while starter cultures of lactic acid bacteria are mentioned in Kaneko, see e.g., col. 5, line 65, col. 6, lines 9 and 23, there is no disclosure or suggestion that such starter cultures be obtained by aerobic cultivation in a porphorin containing medium. Accordingly, there is no suggestion Kaneko for the present invention.

El-Megeed was cited as disclosing storage and freeze drying, but does not disclose or suggest cultivating lactic acid bacteria aerobically in a porphyrin containing medium. Accordingly, the Applicants respectfully request that this rejection be withdrawn, as none of the cited prior art discloses or suggests producing a lactic acid bacterial starter culture by cultivating lactic acid bacteria aerobically in a porphyrin containing medium.

CONCLUSION

In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. An early indication to that effect is now earnestly solicited.

Respectfully submitted,

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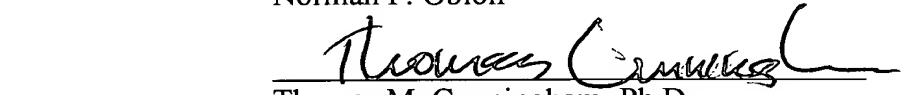

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